

Claims

1. A dual function handlebar mounted actuator including:
5 a hand operated lever arrangement;
 means for operating a first function;
 means for operating a second function;
 said hand operated lever arrangement being arranged to
separately activate at least one of said first and said second function operating
10 means and wherein said first and said second function operating means are
arranged to be linked during use so that a combined first and second function
can be activated.
2. A dual function handlebar mounted actuator according to claim 1 wherein
15 the first function operating means and the second function operating means are
mechanically linked together so that a consistent overlap or separation between
the first and second functions is achieved.
3. A dual function handlebar mounted actuator according to claim 2 wherein
20 the first and second function operating means are permanently linked together.
4. A dual function handlebar mounted actuator according to claim 2 wherein
the first and second function operating means are linked during use by means
of at least one activation member.
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5. A dual function handlebar mounted actuator according to claim 4 wherein
said at least one activation member is adjustable so that the point at which the
combined function is initiated is adjustable.
- 30 6. A dual function handlebar mounted actuator according to claim 3 wherein
the first and second operating means are linked by a cam arrangement.

7. A dual function handlebar mounted actuator according to claim 6 wherein the cam arrangement is adjustable to enable variation in the point at which the second function is initiated.

5 8. A dual function handlebar mounted actuator according to any one of the preceding claims wherein the lever arrangement includes a single component for contact by the user.

9. A dual function handlebar mounted actuator according to any one of the
10 preceding claims wherein the hand operated lever arrangement includes a lever arranged so that movement in a first direction activates said first function operating means and further movement of said lever in the first direction to an activation point activates said second function operating means.

15 10. A dual function handlebar mounted actuator according to claim 9 wherein activation of said lever in a second direction activates said second function operating means and continued activation of said lever in said second direction activates said first function.

20 11. A dual function handlebar mounted actuator according to claim 10 further including adjustment means for adjusting the point at which the first function and/or the second function is activated.

12. A dual function handlebar mounted actuator according to any one of the
25 preceding claims further including first and second actuator members, said first actuator member being arranged to activate said first function when said first operating means is activated and said second actuating member being arranged to activate said second function when said second operating means is activated.

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13. A dual function handlebar mounted actuator according to claim 12 wherein said first and second actuator members each include adjustment

means arranged to enable variation of the point at which operation of said first and second functions occurs.

14. A dual function handlebar mounted actuator according to any one of the
5 preceding claims further including indication means to indicate to the user when the second function is initiated.

15. A dual function handlebar mounted actuator according to claim 14
10 wherein the indication means provides a tactile indication to the user.

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16. A dual function handlebar mounted actuator according to any one of the
preceding claims wherein said lever arrangement includes a first portion and a
second portion, said lever arrangement being arranged so that movement of the
first portion initially operates a first function, movement of the second portion
15 initially operates a second function and movement from a point between the first
and second portions operates both the first and the second functions.

17. A dual function handlebar mounted actuator according to claim 16
wherein continued movement of either the first portion or the second portion of
20 the lever arrangement will respectively result in the operation of the second or
the first functions so that the combined function is operated.

18. A dual function handlebar mounted actuator according to claim 16 further
including a slide member arranged to enable the user's fingers to shift more
25 readily from said first portion to said second portion of the lever arrangement.

19. A dual function handlebar mounted actuator according to any one of the
preceding claims further including a friction adjustor to enable the degree of
friction between the second operating means and a portion of the actuator to be
30 adjusted so that the second operating means can be locked in a position whilst
the first function operating means is varied.

20. A dual function handlebar mounted actuator including a master cylinder actuator and a bias valve, said master cylinder actuator being arranged so that actuation thereof results in a force application to the bias valve which is arranged to operate a first function, a second function or both the first and the second functions.

21. A dual function handlebar mounted actuator according to claim 20 wherein the first function is a clutch function and the second function is a brake function.

22. A dual function handlebar mounted actuator according to claim 21 further including a bias valve actuator arranged to control a bias valve so as to bias the valve to operate the clutch function, the brake function or the combined clutch and brake function.

23. A dual function handlebar mounted actuator according to claim 22 wherein the bias valve includes a piston that is arranged to operate the clutch function and the brake function.

24. A dual function handlebar mounted actuator according to claim 23 wherein the bias valve is connected to a clutch arrangement including a clutch port and a clutch return port and a brake arrangement including a brake port and a brake return port.

25. A dual function handlebar mounted actuator according to claim 24 arranged so that as the piston of the bias valve is actuated, the clutch function is operated, the brake return port is closed, the brake function is operated and the clutch port is shut.

26. A dual function handlebar mounted actuator according to claim 25 wherein following shutting of the clutch port, further travel of the piston of the bias valve will open the clutch return port.

27. A dual function handlebar mounted actuator according to claim 26 further including adjustment means arranged to provide a pre-set bias to the bias valve.

5 28. A dual function handlebar mounted actuator according to any one of claims 21 to 28 wherein the master cylinder actuator and bias valve actuator are formed as separate lever arrangement which are pivotally connected together.

10 29. A dual function handlebar mounted actuator according to any one of claims 20 to 27 wherein the master cylinder actuator and bias valve actuator are formed as a combined lever arrangement.

15 30. A dual function handlebar mounted actuator according to claim 29 wherein said lever arrangement includes a first portion and a second portion, said lever arrangement being arranged so that movement of the first portion operates said master cylinder actuator, movement of the second portion operates said bias valve actuator and movement of the lever arrangement between the first and second portions operates both the master cylinder actuator and the bias valve actuator.

20 31. A dual function handlebar mounted actuator according to claim 29 wherein the master cylinder actuator and bias valve actuator include as a single lever arrangement, said lever arrangement being arranged to move in a first direction to operate the master cylinder actuator and in a second direction to
25 operate the bias valve actuator.

32. A dual function handlebar mounted actuator according to claim 11 wherein the adjustment means includes an adjustable activating rod connected to the lever arrangement and an adjustor cam.

30 33. A dual function handlebar mounted actuator according to claim 32 wherein the adjustment means is arranged so that the activating rod can be adjusted so

that the positioning of the adjustor cam is varied, thereby adjusting the activation point of the first or second function.

5 34. A dual function handlebar mounted actuator according to claim 33 wherein actuation of the lever in the second direction increases the leverage to the first function and/or increases free play in an arrangement provided to operate the first function so as to delay operation of the first function.

10 35. A dual function handlebar mounted actuator for use with a vehicle having an engine, said actuator including a hand operated lever arrangement for operating a brake function and a clutch function, means for sensing the R.P.M of the engine and wherein said lever arrangement is arranged so that when the sensed R.P.M is above a first predetermined value movement of a first portion of the lever arrangement will result in operation of the brake function and
15 wherein when the sensed R.P.M. is below the first predetermined value movement of the first portion of the lever arrangement will result in operation of the brake function and the clutch function so as to prevent stalling of the engine.

20 36. A dual function handlebar mounted actuator according to claim 35 wherein initial movement of a second portion of the lever arrangement results in operation of the clutch function independently of the brake function, and that further movement of the second portion of the lever arrangement results in operation of both the clutch function and the brake function.

25 37. A dual function handlebar mounted actuator according to claim 35 or claim 37 further including indication means arranged to signal to the user that the brake function has been initiated when the second portion of the lever arrangement is moved.

30 38. A dual function handle bar mounted actuator according to claim 37 wherein the indication means includes a tactile indication to the user.

39. A dual function handlebar mounted actuator according to any one of claims 35 to 38 further including adjustment means arranged to adjust the point at which the clutch function is activated.
- 5 40. A dual function handle bar mounted actuator according to any one of claims 35 to 39 further including adjustment means arranged to adjust the point at which the brake function is activated.
- 10 41. A dual function handlebar mounted actuator according to any one of claims 35 to 40 further including a brake function control unit arranged to lock on the brake function when the engine R.P.M. is above the first predetermined value.
- 15 42. A dual function handlebar mounted actuator for a vehicle having an engine including a hand operated lever arrangement and a selector means, said lever arrangement arranged so that when the selector means is in a first position (C) movement of the lever arrangement in a first direction (A) activates a switch so that a clutch function is operated and continued movement of the lever arrangement in the first direction operates a brake function, said lever
20 arrangement further arranged so that movement of the lever arrangement in a first direction when the selector means is in a second position (B) operates the brake function and will also operate the clutch function when the R.P.M. of the vehicle's engine falls below a predetermined value.
- 25 43. A dual function handlebar mounted actuator according to claim 42 wherein the selector means includes a spindle arranged for connection to said lever arrangement.
- 30 44. A dual function handlebar mounted actuator according to claim 43 wherein the spindle is mounted for rotational and sliding movement.
45. A dual function handlebar mounted actuator according to any one of claims 42 to 44 further including adjustment means arranged so that when the

selector means is in the second position (B) and the lever arrangement is moved in the first direction the point of activation of the brake function and the clutch function can be adjusted.

5 46. A dual function handlebar mounted actuator according to any one of claims 42 to 45 further including a control unit, said control unit including a brake solenoid, means for sensing the R.P.M of the engine and a switch arranged to activate when the R.P.M of the vehicle's engine falls below the predetermined value.

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47. A dual function handlebar mounted actuator according to claim 46 arranged so that when the R.P.M of the engine falls below a predetermined value the R.P.M switch is activated so as to open the brake solenoid and operate the clutch function to prevent stalling of the engine.

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48. A dual function handlebar mounted actuator according to any one of claims 42 to 47 wherein the force required for operation of the clutch function and/or the brake function can be partially or fully provided by operation of a foot pedal.

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49. A dual function handlebar mounted actuator including a hand operated lever arrangement arranged for movement in a first direction (A), said movement serving to operate a first function, said lever arrangement being further arranged for movement in a second direction (B), said movement serving to operate a second function, and wherein the actuator further includes a combined function means arranged so that when said lever arrangement is moved in said first direction to an initiation point said combined function means causes said lever arrangement to also move in said second direction so that both the first function and the second function are operated.

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50. A dual function handlebar mounted actuator according to claim 49 further including adjustment means arranged to adjust the initiation point at which the

lever arrangement is caused by said combined function means to move in the second direction.

51. A dual function handlebar mounted actuator according to claim 49 or claim 50 wherein said combined function means includes a cam means and a cam surface, said cam surface being arranged so that when said cam means is driven there along said lever arrangement is caused to move in said second direction .

52. A dual function handlebar mounted actuator according to any one of claims 49 to 51 wherein the lever arrangement can also be moved in the second direction upon operation of a foot pedal.

53. A dual function handlebar mounted actuator including a hand operated lever arrangement pivotally connected to a mount, said lever arrangement including a first function operating means, actuation means pivotally connected to said mount and arranged for connection to a second function operating means, said first and second function operating means being linked so that when said lever arrangement is pivoted to a first point a first function will be operated and when said lever arrangement is pivoted to a second point the first function and a second function will be operated.

54. A dual function handlebar mounted actuator according to claim 53 wherein the actuation means is connected to an operating member which is arranged to pivot the actuation means about said pivot point to operate said second function.

55. A dual function handlebar mounted actuator according to claim 54 wherein said operating member includes a foot operated pedal.

56. A dual function handlebar mounted actuator according to any one of claims 53 to 55 wherein the first function operating means includes a cam surface and a cam follower arranged to run against said cam.

57. A dual function handlebar mounted actuator according to claim 56 wherein the first function operating means further includes a first function cylinder and a first function piston and wherein the cam surface is profiled so that once said first function is operated further pivotal movement of said lever arrangement will result in substantially no movement of said first function piston.

58. A dual function handlebar mounted actuator according to any one of claims 53 to 57 further including first adjustor means for adjusting the point at which the second function is operated upon pivotal movement of the lever arrangement.

59. A dual function handlebar mounted actuator according to claim 58 wherein the first adjustor means includes a threaded member mounted on the lever arrangement having a portion arranged to contact the actuation means so as to initiate pivotal movement of the actuation means.

60. A dual function handlebar mounted actuator according to any one of claims 53 to 59 further including a spindle mounted on the lever arrangement.

61. A dual function handlebar mounted actuator according to any one of claims 53 to 60 further including second adjustor means for adjusting the point at which the first function is operated upon pivotal movement of the actuation means.

62. A dual function handlebar mounted actuator according to claim 61 wherein the second adjustor means includes a threaded member mounted on the actuation means having a portion arranged to contact the lever arrangement so as to initiate pivotal movement of the lever arrangement.

63. A dual function handlebar mounted actuator including a main lever, a first function operating arm arranged to operate a first function and a second function operating arm arranged to operate a second function, said first function

operating arm and said second function operating arm being linked so that a combined first and second function can be operated, and wherein movement of said main lever in a first direction results in operation of the first function and movement of said main lever in a second direction results in operation of said
5 second function.

64. A dual function handlebar mounted actuator according to claim 63 wherein movement of said first function operating arm will result in operation of said first function and continued movement of said first function operating arm
10 results in operation of said combined function and wherein movement of said second function operating arm will result in operation of said second function and continued movement of said second function operating arm results in operation of said combined function

15 65. A dual function handlebar mounted actuator according to claim 63 or claim 64 wherein said first and said second function operating arms are pivotally mounted about a first pivot point.

20 66. A dual function handlebar mounted actuator according to claim 65 wherein the main lever is attached to a cam arrangement arranged to contact said second function operating arm so that when the main lever is moved in said second direction the cam arrangement causes the second function operating arm to pivot about the first pivot point and operate the second function.

25 67. A dual function handlebar mounted actuator according to any one of claims 63 to 66 wherein the first function operating arm includes a cam surface arranged to contact a cam roller arrangement such that movement of the first function operating arm in the first direction causes the cam roller arrangement
30 to operate the first function.

68. A dual function handlebar mounted actuator according to any one of claims 63 to 67 further including a foot control pedal arranged such that activation of the foot control pedal results in operation of the second function.
- 5 69. A dual function handlebar mounted actuator according to claim 68 wherein activation of the foot control pedal causes the second function operating arm to pivot about the first pivot point so as to operate said second function.
- 10 70. A dual function handlebar mounted actuator according to any one of the preceding claims wherein said first function and/or said second function may be activated by a foot operated control.
- 15 71. A dual function handlebar mounted actuator according to any one of the preceding claims wherein the first function is a clutch function and once the clutch function is initiated so as to disengage a clutch of a vehicle, any further travel of the lever arrangement requires little or no additional force to be applied to the lever arrangement by a user.
- 20 72. A dual function handlebar mounted actuator according to any one of the preceding claims wherein an overlap between the first and second functions can be varied by a user during use of a vehicle to which the actuator is attached.
- 25 73. A dual function handle bar mounted actuator according to any one of the preceding claims including an actuator arrangement including a lever movable between a first and a second position and a master cylinder having a piston, said lever being arranged so that when it is moved towards said second position said piston is driven from an initial position to thereby increase pressure within
30 the master cylinder and wherein when said lever is released the pressure within the master cylinder is arranged to return the piston towards the initial position, said piston being returned fully to the initial position upon movement of the lever to the first position.

74. A dual function handlebar mounted actuator according to claim 73 further including an adjustor member connected between the lever and the master cylinder, said adjustor member being arranged to enable some free play
5 between the movement of the lever and movement of the piston of the master cylinder.

75. A dual function handlebar mounted actuator according to any one of the preceding claims wherein the first function is a clutch function and the second
10 function is a brake function.

76. An actuator arrangement including a lever movable between a first and a second position and a master cylinder having a piston, said lever being arranged so that when it is moved towards said second position said piston is
15 driven from an initial position to thereby increase pressure within the master cylinder and wherein when said lever is released the pressure within the master cylinder is arranged to return the piston towards the initial position, said piston being returned fully to the initial position upon movement of the lever to the first position.

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77. An actuator arrangement according to claim 76 further including an adjustor member connected between the lever and the master cylinder, said adjustor member being arranged to enable some free play between the movement of the lever and movement of the piston of the master cylinder.

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78. An actuator arrangement according to claim 76 or claim 77 arranged to be operated by a user's hand or by foot operation or a combination thereof.